

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original): Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft and first and second membrane surfaces, the membrane discs mounted on one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:

rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;

introducing the fluid into at least the overlap area of the filtration device;

creating overflow speeds at the membrane surfaces in the range of 1 to 5 m/sec;

creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;

diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;

collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;

discharging the permeate from the hollow shaft as the flow of filtrate; and
discharging the flow concentrate from the overlap area at an overpressure.

2. (original): Process according to claim 1, wherein the membrane discs have a rectangular cross section.

3. (original): Process according to claim 1, wherein the membrane discs have a triangular cross section.

4. (original): Process according to claim 1, wherein each of the membrane discs have different rotational speeds.

5. (original): Process according to claim 1, further comprising the step of discharging the permeate at a vacuum.

6. (original): Process according to claim 5, wherein the vacuum is up to 0.5 bar.

7. (original): Process according to claim 1, wherein the overpressure is 10 to 14 bar.

8. (new): Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft, a triangular cross section, and first and second membrane surfaces, the membrane discs mounted on a one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:

rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;

introducing the fluid into at least the overlap area of the filtration device;

creating overflow speeds at the membrane surfaces;

creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;

diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;

collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;

discharging the permeate from the hollow shaft as the flow of filtrate; and

discharging the flow concentrate from the overlap area at an overpressure.

9. (new): Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft and first and second membrane surfaces, the membrane discs mounted on a one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:

rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;

introducing the fluid into at least the overlap area of the filtration device;

creating overflow speeds at the membrane surfaces;

creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;

diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;

collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;

discharging the permeate from the hollow shaft as the flow of filtrate; and

discharging the flow concentrate from the overlap area at an overpressure of 10 to 14 bar.